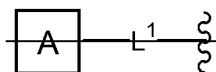


Amendments to the Claims

This listing of claims will replace all prior versions, and listing, of claims in the application.

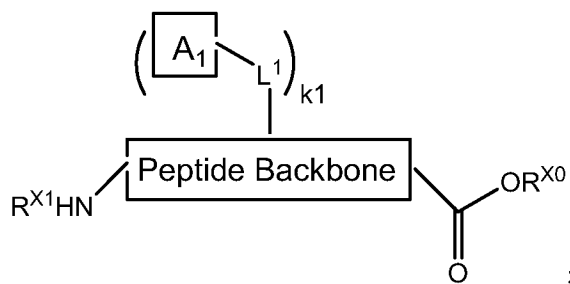
1. **(Currently Amended)** A method for preparing a ~~polyfunctionalized~~ peptide comprising a peptidic backbone made up of four or more amino acids ~~wherein two or more non-adjacent amino acids are independently substituted with a moiety having the structure:~~



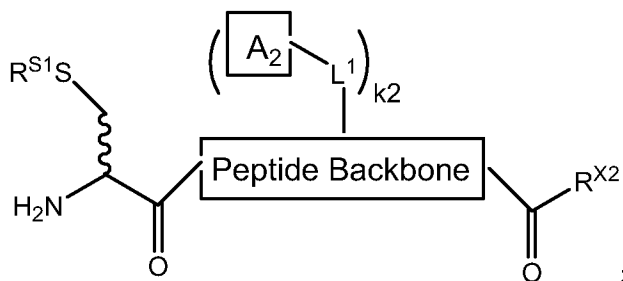
~~with the proviso that the peptide sequence between any two consecutive, non-adjacent, amino acids bearing a $A-L^1$ moiety comprises at least one cysteine residue;~~

wherein the method comprises a step of:

reacting a peptide acyl donor comprising a peptidic backbone made up of two or more amino acids wherein said peptide acyl donor has the structure:



with a peptide amine acceptor having the structure:



~~under suitable~~ reducing reaction conditions employing an excess of a reducing agent to effect ligation;

wherein k1 and k2 are independently integers between 1 and about 20;

each occurrence of ~~A~~, A₁ and A₂ is independently an aliphatic, heteroaliphatic, aromatic, heteroaromatic, aryl, or heteroaryl ~~or a pharmaceutically useful group or entity~~;

R^{S1} is a sulfide protecting group;

R^{X0} is a disulfide-substituted aryl moiety ~~group such that the moiety C(=O)OR^{X0} can be made to undergo ligation with the peptide amine acceptor~~;

each occurrence of L¹ is independently a substituted or unsubstituted, linear or branched, cyclic or acyclic, saturated or unsaturated aliphatic or heteroaliphatic moiety;

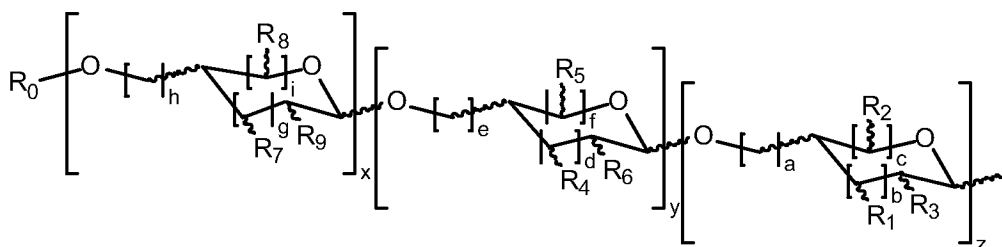
R^{X1} is hydrogen, alkyl, acyl, aromatic, heteroaromatic, aryl, heteroaryl, -alkyl(aryl), -alkyl(heteroaryl), a nitrogen protecting group, an amino acid or a protected amino acid;

R^{X2} is -OR^{X2a} or -NR^{X2b}R^{X2c}, wherein R^{X2a} is hydrogen, alkyl, aromatic, heteroaromatic, aryl, heteroaryl, -alkyl(aryl), -alkyl(heteroaryl), a carboxylic acid protecting group, an amino acid or a protected amino acid; and R^{X2b} and R^{X2c} are independently hydrogen, alkyl, aromatic, heteroaromatic, aryl, heteroaryl, -alkyl(aryl), -alkyl(heteroaryl), a nitrogen protecting group, an amino acid or a protected amino acid.

2. **(Canceled)**

3. **(Currently Amended)** The method of claim 1, wherein each occurrence of ~~A~~, A₁ and A₂ is independently a biomolecule, a small molecule, a macromolecule or a diagnostic label.

4. **(Currently Amended)** The method of claim 1, wherein each occurrence of ~~A~~, A₁ and A₂ is independently a carbohydrate determinant having the structure:

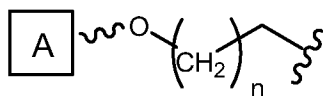


wherein a, b, c, d, e, f, g, h, i, x, y and z are independently 0, 1, 2 or 3, with the proviso that the x, y and z bracketed structures represent furanose or pyranose moieties and the sum of b and c is 1 or 2, the sum of d and f is 1 or 2, and the sum of g and i is 1 or 2, and with the proviso

[illegible]

5. **(Withdrawn)** The method of claim 1, wherein each occurrence of L¹ is independently –O-(CH₂)_n–, wherein n is 0-9, or a glycoside-containing moiety.

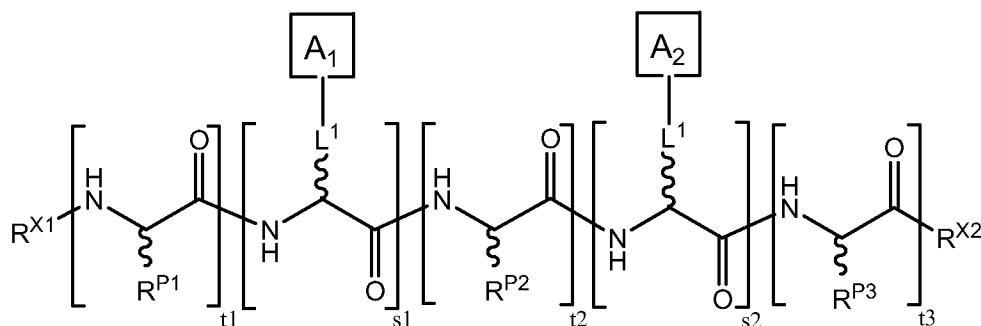
6. **(Withdrawn)** The method of claim 1, wherein L^1 is $-O-(CH_2)_n-CH_2-$ and two or more non-adjacent amino acids is/are independently substituted with a moiety having the structure:



wherein each occurrence of n is independently 0-8.

7. **(Currently Amended)** The method of claim 1, wherein each occurrence of A , A_1 and A_2 is independently selected from the group consisting of Globo-H, fucosyl GM1, KH-1, glycophorin, ~~STN~~, STn, (2,3)ST, Le^y , Le^x , N3, Tn, ~~2,6-STn~~, 2,6-ST, Gb3 and TF.

8. **(Currently Amended)** The method of claim 1, wherein the ~~polyfunctionalized~~ peptide has the structure:



wherein s_1 and s_2 are independently an integer from 1 to about 20;

t_1 , t_2 and t_3 are each independently an integer;

R^{X1} is hydrogen, alkyl, acyl, aromatic, heteroaromatic, aryl, heteroaryl, -alkyl(aryl), -alkyl(heteroaryl), a nitrogen protecting group, an amino acid or a protected amino acid;

R^{X2} is $-OR^{X2a}$ or $-NR^{X2b}R^{X2c}$, wherein R^{X2a} is hydrogen, alkyl, aromatic, heteroaromatic, aryl, heteroaryl, -alkyl(aryl), -alkyl(heteroaryl), a carboxylic acid protecting group, an amino acid or a protected amino acid; and R^{X2b} and R^{X2c} are independently hydrogen, alkyl, aromatic, heteroaromatic, aryl, heteroaryl, -alkyl(aryl), -alkyl(heteroaryl), a nitrogen protecting group, an amino acid or a protected amino acid;

R^{P1} , R^{P2} and R^{P3} are independently H, alkyl, heteroalkyl, aromatic, heteroaromatic, aryl, heteroaryl, -alkyl(aryl), -alkyl(heteroaryl), or a natural or non-natural amino acid side chain;

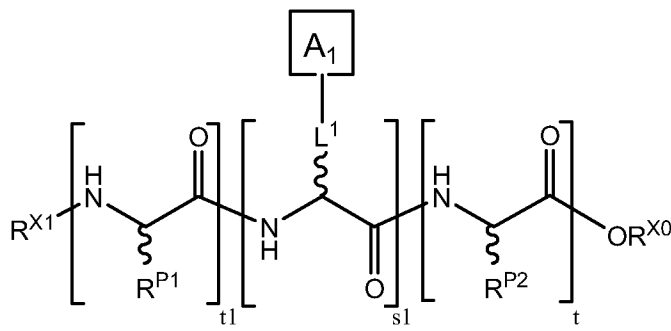
each occurrence of L^1 is independently a substituted or unsubstituted aliphatic or heteroaliphatic moiety;

A_1 and A_2 are each independently an aliphatic, heteroaliphatic, aromatic, heteroaromatic, aryl, or heteroaryl or a pharmaceutically useful group or entity; and

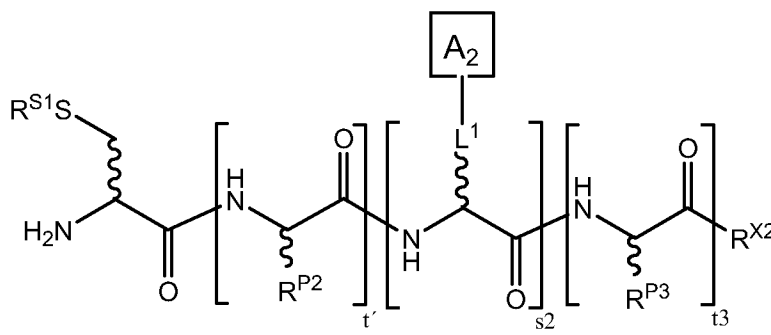
at least one occurrence of the bracketed structure t2 is a cysteine residue or protected cysteine residue;

and the method comprises a step of:

reacting a peptide acyl donor having the structure:



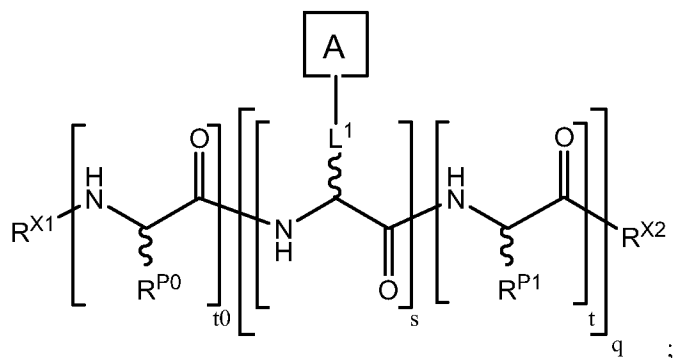
with a peptide amine acceptor having the structure:



under ~~suitable~~ reducing reaction conditions employing an excess of a reducing agent to effect ligation;

wherein the sum $t+t'$ equals $(t_2)+1$; ~~R^{S1} is a sulfide protecting group; and R^{X0} is a group such that the moiety $-C(=O)OR^{X0}$ can be made to undergo ligation with the glycopeptide amine acceptor.~~

9. **(Currently Amended)** The method of claim 8, wherein the step of reacting the peptide acyl donor with the peptide amine acceptor is repeated a desired number of times, to prepare a ~~polyfunctionalized~~ peptide having the structure:



wherein R^{X1} and R^{X2} are as defined in claim 8;

each occurrence of A may be the same or different and may be as defined for A_1 and A_2 in claim 8;

each occurrence of R^{P1} may be the same or different and may be as defined for R^{P1} and R^{P2} in claim 8;

q is an integer greater than or equal to 2;

each occurrence of s is independently an integer from 1 to about 20;

each occurrence of t is independently an integer;

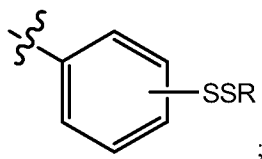
t_0 is an integer; and

each occurrence of R^{P0} is independently H, alkyl, heteroalkyl, aromatic, heteroaromatic, aryl, heteroaryl, -alkyl(aryl), -alkyl(heteroaryl), or a natural or non-natural amino acid side chain.

10. **(Original)** The method of claim 9, wherein q is an integer between 2 and about 5.
11. **(Original)** The method of claim 9, wherein q is 2.
12. **(Original)** The method of claim 9, wherein the sum $s+t$ is between about 2 and about 6.
13. **(Original)** The method of claim 9, wherein t_0 is an integer from 0 to about 20.
14. **(Original)** The method of claim 9, wherein R^{X1} is hydrogen, Fmoc or Ac.
15. **(Original)** The method of claim 9, wherein R^{X2} is NH_2 .

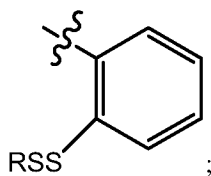
16. **(Cancelled)**

17. **(Original)** The method of claim 9, wherein R^{X0} has the structure:



wherein R is an aliphatic, heteroaliphatic, aromatic or heteroaromatic moiety.

18. **(Original)** The method of claim 17, wherein R^{X0} has the structure:

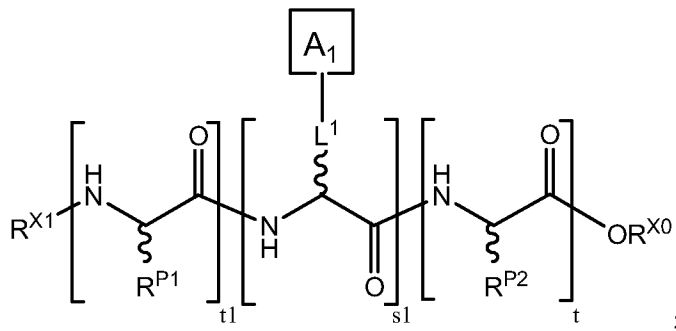


wherein R is lower alkyl.

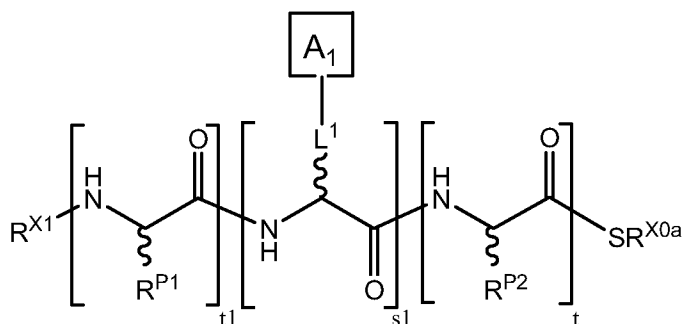
19. **(Original)** The method of claim 18, wherein R is ethyl.

20. **(Original)** The method of claim 9, wherein R^{S1} is -*S*tBu.

21. **(Currently Amended)** The method of claim 9, wherein in the step of reacting the peptide acyl donor having the structure:



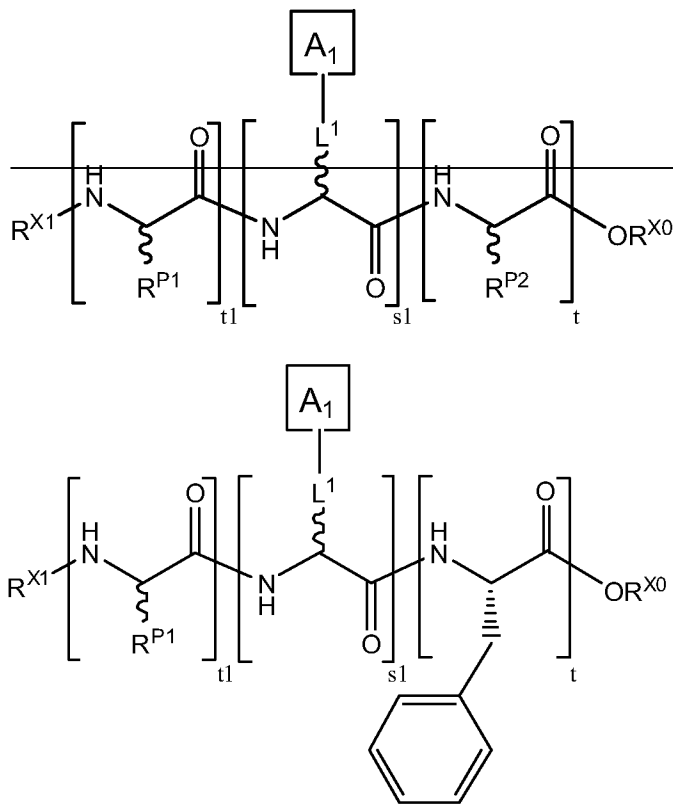
with the peptide amine acceptor ~~under suitable conditions to effect ligation~~, an intermediate having the following structure is formed in situ:



wherein R^{X0a} is an oxygen-substituted aryl moiety.

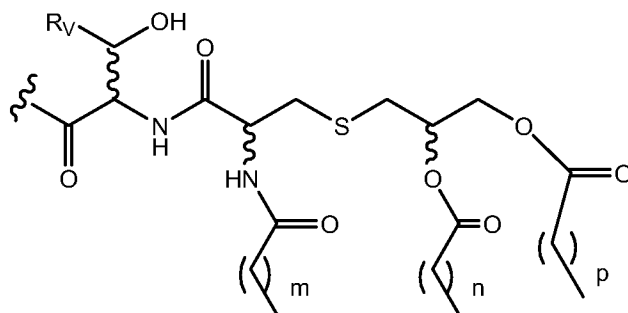
22. **(Currently Amended)** The method of claim 21, wherein the ~~suitable conditions to effect ligation comprise~~ reducing agent is 2-mercaptoethanesulfonic acid, sodium salt MESNa.

23. **(Currently Amended)** The method of claim 9, wherein ~~in~~ the peptide acyl donor ~~having~~ has the structure:



~~the amino acyl residue directly attached to~~ OR^{X0} ~~is~~ phenylalanine.

24. **(Withdrawn/Currently Amended)** The method of claim 1, wherein ~~when~~ at least one occurrence of A ~~(or A₁ and/or A₂, as further defined for A)~~ is a carbohydrate domain, and some or all of carbohydrate domains are O-linked to the peptide backbone.
25. **(Currently Amended)** The method of claim 1, wherein ~~when~~ at least one occurrence of A ~~(or A₁ and/or A₂, as further defined for A)~~ is a carbohydrate domain, and some or all of carbohydrate domains are N-linked to the peptide backbone.
26. **(Withdrawn/Currently Amended)** The method of claim 1, wherein the ~~polyfunctionalized~~ peptide is symmetrical.
27. **(Currently Amended)** The method of claim 1, wherein the ~~polyfunctionalized~~ peptide is nonsymmetrical.
28. **(Withdrawn/Currently Amended)** The method of claim 1, further comprising a step of conjugating the ~~polyfunctionalized~~ peptide to an immunogenic carrier.
29. **(Withdrawn)** The method of claim 28, wherein the carrier is a protein, a peptide or a lipid.
30. **(Withdrawn)** The method of claim 28, wherein the carrier is Bovine Serum Albumin (BSA), Keyhole Limpet Hemocyanin (KLH) or polylysine.
31. **(Withdrawn)** The method of claim 28, wherein the carrier is a lipid carrier having the structure:

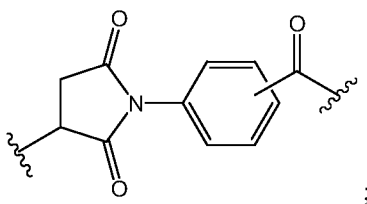


wherein m, n and p are each independently integers between about 8 and 20; and R_V is hydrogen, substituted or unsubstituted linear or branched chain lower alkyl or substituted or unsubstituted phenyl.

32. **(Withdrawn)** The method of claim 31, wherein m', n' and p' are each 14.

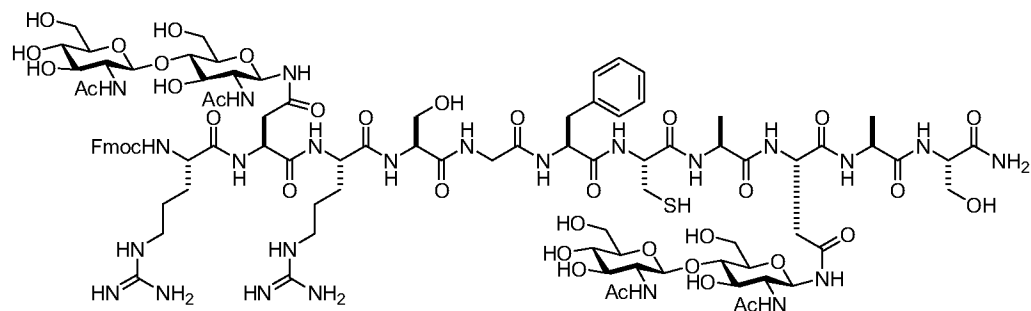
33. **(Withdrawn/Currently Amended)** The method of claim 28, wherein the carrier is linked to the ~~polyfunctionalized~~ peptide through a crosslinker.

34. **(Withdrawn/Currently Amended)** The method of claim 33, wherein the crosslinker is a fragment having the structure:

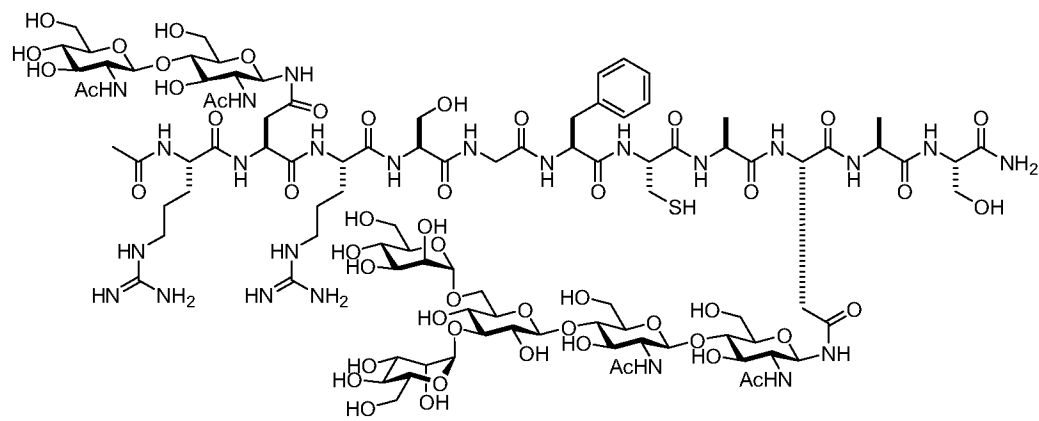


whereby said structure is generated upon conjugation of a maleimidobenzoic acid N-hydroxy succinimide ester with a suitable functionality on the ~~polyfunctionalized~~ peptide.

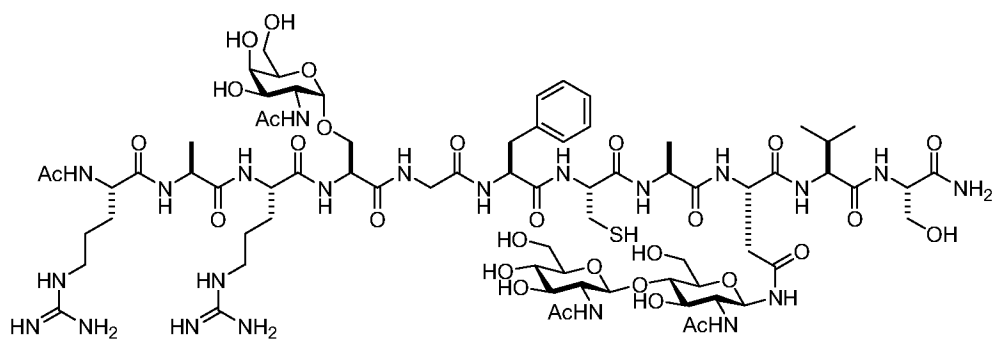
35. **(Currently Amended)** The method of claim 1, wherein the ~~polyfunctionalized~~ peptide has the structure:



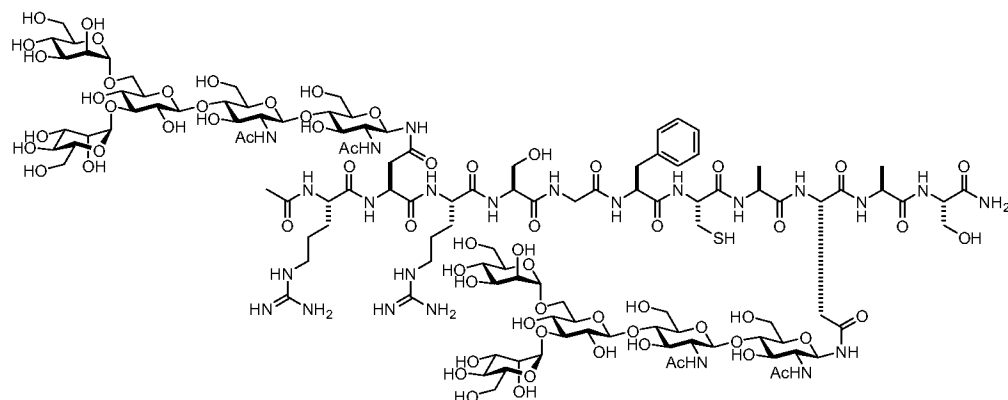
36. **(Withdrawn/Currently Amended)** The method of claim 1, wherein the multifunctionalized peptide has the structure:



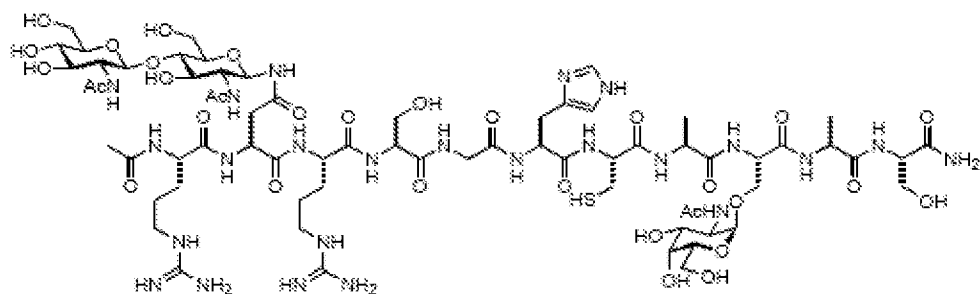
37. **(Withdrawn/Currently Amended)** The method of claim 1, wherein the multifunctionalized peptide has the structure:



38. **(Withdrawn/Currently Amended)** The method of claim 1, wherein the multifunctionalized peptide has the structure:



39. **(Withdrawn/Currently Amended)** The method of claim 1, wherein the polyfunctionalized peptide has the structure:



40. **(Cancelled)**